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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/364,788 07/30/99 ELDRIDGE

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EXAMINER

MM91/0622

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ART UNIT

PAPER NUMBER

2839

DATE MAILED:

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/364,788

Applicant(s)
Eldridge et al.

Examiner
Son Nguyen

Art Unit
2839



- The MAILING DATE of this communication appears on the cover sheet with the correspondence address -

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on Apr 6, 2001

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 43-57 is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 43-57 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirements.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☒ The proposed drawing correction filed on Apr 6, 2001 is: a) ☐ approved b) ☒ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)

18) ☐ Interview Summary (PTO-413) Paper No(s). _____

16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

19) ☐ Notice of Informal Patent Application (PTO-152)

17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____

20) ☐ Other: _____

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DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Drawings

2. The drawings are objected to because *insulative* and *conductive* layers in figures 2A-D, 4, 6A-L, 7A-B, 8A and 9A-D, should be cross-hatched as such (see attachment). Correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 43-57 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not supported in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

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The subject matter of “*said resilient contact element being formed by depositing an insulative material, depositing a conductive material layer, depositing a sacrificial material layer, plating said resilient material contact layer, plating said conductive material contact layer on said resilient material contact layer, and removing the sacrificial material layer*” in claims 43 and 50, which were not supported in the specification. All above limitations is a method step of forming different layers on a substrate for electrically connecting with a resilient contact element. It is not a method step of forming the resilient contact element. Because the resilient contact element itself having only two layers which are resilient material contact layer (209) and a conductive material contact layer (210).

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 43-57 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 43 and 50, a single claim which claims both an apparatus and the method steps of using the apparatus is indefinite under 35 U.S.C. 112, second paragraph. In *Ex parte Lyell*, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990), see MPEP 2173.05(p).

Claim 43, line 14, applicant should clarify what applicant intend by “said outwardly facing surface defining a plane spaced from said outwardly facing surface.”

Claim 44, line 2, there is no antecedent basis for “said resilient contact elements.”

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Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 43-44, 46-52 and 54-57, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US 5,944,537) and Dennison (US 6,140,219).

Regarding claims 43, 46-50, 52 and 54-57, Smith et al. discloses an interconnect assembly [figures 6, 12, 29 and 31] formed of insulative, conductive and resilient materials, the interconnect assembly comprising:

- a first substrate [14, figure 6] having an outwardly facing surface defining a bond pad [3] and a second substrate [101];

- a resilient contact element [15, figure 6] having a proximal end portion [12] fixed relative to the outwardly facing surface and in communication with the bond pad, an elongated contact structure [11] extending from the proximal end portion and having a distal end [30]; wherein the distal end portion being movable relative to outwardly facing surface about the proximal end portion through a top plane defined by the stop surface [figure 6 and 29];

- a plurality of resilient contact elements [15, figure 31];

- each of the resilient contact element including a resilient material contact layer [11, figure 11] and a conductive material contact layer [19, figure 12];

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- a stop structure [36, figure 29] including a stop surface defines the top plane spaced from the outwardly facing surface and parallel thereto; and

- the elongated contact structure has substantial a triangular/beveled shape, a pointed tip, and thickness [figures 16-20].

Smith et al. discloses the instant claimed invention except for the interconnect assembly having a sacrificial material layer [see claim 5].

It would have been obvious to one having ordinary skill in the art at the time invention was made to modify the interconnect assembly of Smith et al. to provide the sacrificial material layer as taught by Dennison for the purpose of facilitate forming of the electrical contact elements in the substrate.

9. Regarding claims 44 and 51, Smith et al. and Dennison discloses the instant claimed invention including a pitch of two adjacent contact elements having a range of 20-12- microns [column 8, lines 44-45]. However Smith et al. does not disclose the pitch having a range of 2.5-2000 microns. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the pitch range of the two adjacent element contacts of Smith et al. to have a range of 2.5-2000 microns in order to accommodate with a fine corresponding pitch of mating contacts of the another substrate, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

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10. Claims 45 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. and Dennison and Shenoy et al. (US 5,994,766):

Smith et al. and Dennison discloses the instant claimed invention except to show a redistribution trace providing the bond pad.

Shenoy et al. discloses a redistribution circuit/trace arrangement including a plurality of pads.

It would have been obvious to one having ordinary skill in the art at the time invention was made to modify the substrate of Smith et al. to provide the redistribution trace as taught by Shenoy et al. for the purpose of providing the signal traces to be routed and providing the electrical signals to the pads.

Response to Arguments

11. Applicant's arguments with respect to claims 43 and 50 have been considered but are moot in view of the new ground(s) of rejection.

As best understood, Smith et al. and Dennison shows applicant claimed an interconnect assembly (see rejection above).

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Son Nguyen whose telephone number is (703) 308-8745.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus, can be reach on (703) 308-3119. The fax phone number for this Group is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1782 .



Son Nguyen

June 12, 2001



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